

Problem of the Week: Week 5 (Sum2) : Year 7: Ratio and Proportion: Solutions

- Use ratio notation, including reduction to the simplest form to solve problems.
- Divide a given quantity into two parts in a given part: part or part: whole ratio.

Toad in the Hole

- Suppose you can buy Toad in the Hole for one person from a supermarket for £1.

Would it be cheaper to make it yourself if you want to feed a family of three?

Shopping list

- 400g sausages, £2
- 1 litre vegetable oil, £1.45
- 500g plain flour, 48p
- 6 eggs, £1.46
- 1 litre milk, 48p

**Ingredients required to make Toad in the Hole for three people:**

- 400g sausages
- 15ml vegetable oil
- 100g plain flour
- 1 egg
- 250ml milk

You may like to know that ...

Toad in the Hole is a traditional English dish, consisting of sausages in a batter, and served with gravy.

<https://nrich.maths.org/8422>

Solution

How much would it cost to make enough Toad in the Hole to feed a family of three?

You'll need to buy all the things on the shopping list - and you'll only need to buy one of each item, because each provides more than is needed in the recipe for Toad in the Hole for 3.

So...

$$£2 + £1.45 + 48p + £1.46 + 48p = £5.87$$

As the supermarket Toad in the Hole will cost £3 (3 x £1), it is cheaper to buy the ready meals!

But you would have a lot of extra oil, flour, eggs and milk left still, so maybe if you are cooking for more people (or if you want to make several meals and freeze them, or you're quite happy to have some of the ingredients left for something else) it would be cheaper to cook from scratch.

So let's see how much what we actually need for a Toad in the Hole for 3 people costs:

400g pack of sausages costs £2

If 1 litre of oil costs £1.45, then 10ml costs 1.45p and so 15ml costs 2.175p ($145p \div 1000ml \times 15$)

If 500g flour costs 48p, then 100g costs 9.6p ($48p \div 5$)

If 6 eggs cost £1.46, then 1 egg costs 24.33p ($146p \div 6$)

If 1 litre milk costs 48p, then 250ml costs 12p ($48p \div 1000ml \times 250$)

So the actual cost of the meal for three people is £2.46 (to the nearest penny) - rather less than £5.87, and also less than the £3 that three ready meals would cost.

Marmalade

Marmalade is made from sugar and oranges in the ratio 3:5

A jar of marmalade contains 120g of sugar

What is the mass of the oranges in the jar?



The mass of the oranges is 200g

Sugar : Oranges
3 : 5 = 8 equal shares

120g of sugar

? g of oranges



$$120 \div 3 = 40 \text{ g per share}$$

$$40 \times 5 = \mathbf{200g \text{ of oranges}}$$